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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/728,212	11/29/2000	John H. Jerman	A-70056/ENB	4420

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EXAMINER	
RODRIGUEZ, ARMANDO	
ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 08/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/728,212	JERMAN ET AL.	
	Examiner	Art Unit	
	Armando Rodriguez	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *13,35 and 36* is/are allowed.

6)☐ Claim(s) *1-12,14-22,26-34,37 and 38* is/are rejected.

7)☒ Claim(s) *23-25 and 39* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

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TECHNOLOGY CENTER 2800

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-39 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

The indicated allowability of claim 31 is withdrawn in view of the 35 USC 112 issue.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 31-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 31 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: no structure is recited for providing adjustments to the optical path for selecting a wavelength.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-10,14,15,18,28-30,37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al (PN 6,493,365) in view of McIntyre (PN 5,319,257).

Regarding claims 1,2,5,6,8,10,14,15,28,29,37 and 38,

Wu et al illustrates in figure 3 a tunable laser in a Littman-Metcalf configuration, whose structural arrangement and operation is well in the art. The tunable laser having a grating (340), a mirror (350), a laser (330) and an actuator (370), where the actuator provides the tuning by angular displacement of the grating, as described in column 6 lines 36-65. In column 7 lines 8-29, describes the actuator as a rotary stepper motor or anyone of a linear stepper motors, piezoelectric stacks, bimetallic element, AC/DC motors, etc.

Wu et al is silent as to the use of a microactuator, which implies small in size.

McIntyre discloses a microactuator used for positioning in nanometer increments, as described in the abstract and column 1. Column 5 lines 61-68 describes the undesirable transients generated by the stepper motor and in column 6 lines 1-5 suggest replacing a stepper motor with an microactuator due to the smooth and continuous motion, as illustrated in figure 7.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to replace the stepper motor of Wu et al with the microactuator of McIntyre because it would eliminate the undesirable transients generated by the stepper motor. Furthermore, any person having ordinary skill in the art will have the capability of providing the microactuator with the necessary modifications for it to operate with the tunable laser.

Regarding claim 7,

The pivot point is an obvious design of the Littman-Metcalf configuration, as it is well known in the laser art.

Regarding claim 3,4

The replacement of the stepper motor with microactuator will provide sufficient angular movement for selecting a wavelength within the nanometer range, since the microactuator operates in the nanometer range.

Regarding claims 9,18 and 30,

Wu et al (PN 6,493,365) in view of McIntyre (PN 5,319,257) discloses the claimed invention except for the second laser source and second microactuator. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a second laser source and a second microactuator, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. **St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.**

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over, Wu et al (PN 6,493,365) in view of McIntyre (PN 5,319,257), as applied to claim 1 above and further in view of Jerman et al (PN 5,998,906).

Wu et al illustrates in figure 3 a tunable laser in a Littman-Metcalf configuration, whose structural arrangement and operation is well in the art. The tunable laser having a grating (340), a mirror (350), a laser (330) and an actuator (370), where the actuator provides the tuning by angular displacement of the grating, as described in column 6 lines 36-65. In column 7 lines 8-29, describes the actuator as a rotary stepper motor or

anyone of a linear stepper motors, piezoelectric stacks, bimetallic element, AC/DC motors, etc.

Wu et al is silent as to the use of a microactuator, which implies small in size.

McIntyre discloses a microactuator used for positioning in nanometer increments, as described in the abstract and column 1. Column 5 lines 61-68 describes the undesirable transients generated by the stepper motor and in column 6 lines 1-5 suggest replacing a stepper motor with an microactuator due to the smooth and continous motion, as illustrated in figure 7.

McIntyre is does not disclose an electrostatic microactuator.

Jerman et al in the abstract discloses an electrostatic micro actuator having comb drive fingers.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute the micro actuator of McIntyre with the micro actuator of Jerman et al because both actuator will provide movement to a mirror for deflecting a laser beam and will eliminate the undesirable transients generated by the stepper motor.

Claims 16,17 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al (PN 6,493,365) in view of McIntyre (PN 5,319,257) as applied to claim 1 above, and further in view of Mattori et al (PN 6,081,539).

The use of sensors and detectors to obtain an error signal by monitoring a predetermined wavelength of a laser system and maintaining such wavelength via a

feedback circuit is well known and commonly used in the laser art, as shown by the external cavity tunable laser system of Mattori et al illustrated in figure 1.

Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al (PN 6,493,365) in view of McIntyre (PN 5,319,257) as applied to claim 1 above, and further in view of Broutin et al (PN 6,198,757).

The use of electroabsorptive modulators (EML) in lasers for communication systems is well known in the laser art, as shown in figure 1 and disclosed in column 5 lines 6-11of Broutin et al.

Allowable Subject Matter

Claims 23-25 and 39 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: None of the prior arts alone or in combination discloses the claim invention having the limitations of dependent claim 23 and 39.

Regarding claims 23-25,

None of the prior arts alone or in combination discloses the claimed microactuator coupled to the collimating lens for moving the collimating lens.

Regarding claim 39,

None of the cited prior arts alone or in combination discloses the claimed microactuator having a counterbalance coupled to the microactuator and the reflective element for inhibiting undesirable movement.

Claims 13,35 and 36 are allowed.

The following is an examiner's statement of reasons for allowance:

None of the prior arts alone or in combination discloses the claimed tunable laser having the structural combination of independent claims 13 and 31.

Regarding claims 13,35 and 36,

None of the cited prior arts alone or in combination discloses the claimed tunable laser having the limitations cited in claim 13 in particular having a counterbalance carried by the substrate and coupled to the microactuator for inhibiting undesirable movement.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Armando Rodriguez whose telephone number is (703) 308-6218. The examiner can normally be reached on 10-hour day / M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-4881.

Armando Rodriguez
Examiner
Art Unit 2828

Paul Ip
Supervisor
Art Unit 2828

AR/PI
July 22, 2003